

WHAT IS CLAIMED IS:

1. A solid electrolyte for rechargeable cells, comprising:
5 an absorbent in powder form having a particle size not more than 40 μm , a polymer binder and an ion conductive liquid electrolyte, wherein said absorbent is added in an amount of 30 to 95 % by weight based on the total weight of the electrolyte film under the dried condition that no liquid electrolyte is contained therein;
10 said ion conductive liquid electrolyte is added in an amount of 30 to 90 % by weight based on the total weight of the electrolyte including liquid electrolyte; and the solid electrolyte has 10 to 200 μm of thickness under the dried condition not containing liquid electrolyte.
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2. A solid electrolyte for rechargeable cells according to Claim 1, said absorbent is a mixture of one or two or more selected from the group consisting of porous polymer particles such as polyethylene, polypropylene, polystyrene, polyurethane, pulp, cellulose, cork and
20 wood powder; mineral particles such as clay, paragonite, montmorillonite and mica; synthetic oxide particles such as zeolite, porous silica and porous alumina; mesoporous molecular sieves having 2 to 30 nm of pore diameter made of oxides or polymers; and other commercially available absorbents;
25 said polymer binder is a mixture of one or two or more selected from the group consisting of copolymers of polyvinylidene fluoride, vinylidene fluoride and hexafluoropropylene, copolymers of vinylidene

fluoride and maleic anhydride, polyvinylchloride, polymethylmethacrylate, polymethacrylate, cellulose triacetate, polyurethane, polysulfone, polyether, polyethylene, polypropylene, polyethylene oxide, polyisobutylene, polybutylidene, polyvinylalcohol, polyacrylonitrile, polyimide, polyvinyl formal, acrylonitrilebutyldiene rubber, ethylene-propylene-diene-monomer, tetraethyleneglycol diacrylate, polydimethylsiloxane, polycarbonate and silicon polymer, or their copolymer;

said ion conductive liquid electrolyte is obtained by dissolving one or two or more lithium salts selected from the group consisting of LiClO_4 , LiBF_4 , LiPF_6 , LiAsF_6 , LiSCN , LiCF_3SO_3 , $\text{LiN}(\text{CF}_3\text{SO}_2)_2$ and $\text{LiC}(\text{CF}_3\text{SO}_2)_3$ in a mixture of one or two or more organic solvents selected from the group consisting of ethylene carbonate, propylene carbonate, dimethylcarbonate, diethylcarbonate, ethylmethylcarbonate, γ -butyrolactone, 1,3-dioxane, tetrahydrofuran, 2-methyltetrahydrofuran, dimethylsulfoxide, sulfolane, N,N-dimethylformamide, diglyme, triglyme and tetraglyme in a concentration of 0.5M to 2M.

3. A solid electrolyte for rechargeable cells according to Claim 2, in which said absorbent is a mixture of one or two or more selected from the group consisting of mineral particles, synthetic oxide particles and mesoporous molecular sieves.

4. A process for the preparation of the solid electrolyte for rechargeable cells according to any one of Claims 1 to 3, which comprises the steps of:

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dissolving a mixture of an absorbent and a polymer binder in a solvent for the polymer binder,

making the resulting solution into a film and drying it to form an electrolyte film, and then

5 subjecting the resulting electrolyte film to absorb an ion conductive liquid electrolyte.

5. A rechargeable lithium cell, which is obtained by the following steps:

10 dissolving a mixture of an absorbent and a polymer binder in a solvent for the polymer binder,

making the resulting solution into a film and drying it to form an electrolyte film,

15 assembling the resulting electrolyte film together with a cathode and an anode separately prepared to form a cell, and then

subjecting the resulting cell to absorb an ion conductive liquid electrolyte.

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